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To study the effects of context on the performance of children reading at first grade level, 26 retarded and 24 normal children were tested. Subjects read words printed individually on separate pages; they also read the word in the context of a sentence. Results indicated that provision of a context produced significant improvement in the reading performance of both groups, but the hypotheses that word recognition by context would be significantly greater for the normal subjects was not supported. Reasons for the failure of this hypothesis are given; the need to help retardates make the most effective use of context clues is expressed. (RJ)

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Research Report

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RESEARCH AND DEMONSTRATION

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ABSTRACT

This study tested two hypotheses: a) provision of context will produce significant improvement in word recognition of mentally retarded and normal Ss reading at the first grade level; b) facilitation of word recognition by context will be significantly greater for normal, as compared to mentally retarded, Ss. Procedure involved comparison of reading performance under wordlist and context conditions. An analysis of variance, based on error scores, upheld the study's first hypothesis, but failed to support the second.

THE EFFECT OF CONTEXT ON THE READING OF MR AND NORMAL CHILDREN AT THE FIRST GRADE LEVEL[1]

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The literature contains a small number of studies concerned either tangentially or directly with the effect or context on children's reading. Bennett (1936) analyzed the responses of retarded readers in the third or fourth grade and concluded that 41% of their errors were relevant to context. Weber's (1968) data on errors made by first grade children in oral reading indicated that these were "grammatically acceptable" to the preceding text 90% of the time. Bradbury's Master's thesis (1943) reported that fourth grade children were able to discriminate one out of three unknown words through the use of context cues. Robinson (1963) decided that context cues were "not very successfully used" by his fourth grade Ss, but suggested that this might have been due to the difficulty of the experimental task.

Mitchell (1968) reported a study by Biemiller that undertook to chart the development of reading ability in first grade children. Biemiller isolated three separate phases: the first showed a reliance on context cues, with graphemic cues taking a secondary role; the next showed an increase in No Response errors, with graphemic and context cues secondary; the third indicated a drop in No Response errors, with graphemic and context cues predominating. About 55% of all errors in the first and third phases were context cues, but these dropped to 29% in the second phase.

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Goodman's (1965) study originally stimulated the present one. It analyzed the "miscues," or reading errors, made by elementary school children and also measured the effects of context on reading performance. Goodman's materials consisted of a graduated set of stories taken from the Betts Reading Series. The experimental task for each S was determined in the following manner. S was given a wordlist excerpted from a story at his grade level; if the wordlist was judged unsuitable, one based on an easier, or harder, story was presented. Eventually, each S had a wordlist of comparable difficulty, with the number of words missed constituting a controlled variable. S then read the story from which that wordlist had been excerpted, and his performance under the context vs. wordlist conditions was compared. Goodman found that the context conditions produced a substantial reduction of reading errors (62%) for first grade readers, with an even greater reduction for Grades 2 and 3. However, since he did not control for order, his context error scores may have been artificially reduced by a practice effect.

Three studies offer incidental data concerning the effect of context on the reading performance of retarded Ss. Dunn (1954) set out to test the hypothesis that there would be a qualitative difference in the reading processes of mentally retarded and normal Ss. His population consisted of retardates with a mean CA of 13.3 and mean MA of about 9, along with equal MA normal controls. Dunn's test battery included his own measure of ability to use context cues, and he found normal Ss significantly superior on this measure. Shotick's (1960) study dealt with the reading comprehension of mentally retarded and normal children whose mean MA was about 8.8. One of Shotick's reading comprehension tests measured use of context, and again showed normal Ss to be superior. Sheperd (1967) undertook to analyze various factors underlying the reading performance of mentally retarded Ss with a mean

MA of 7.10. These were subdivided into adequate and inadequate readers. Sheperd's test battery included a measure of ability to use context cues and it produced higher scores for adequate readers than for inadequate ones.

The present report deals with the differential effects of context on the performance of retarded children and normal controls reading at the first grade level. The procedure was a modified version of that adopted by Goodman. It differed from Goodman's in two major respects: it used a specified experimental task, and controlled for order. The present study also differed from previous studies providing data on use of context by retarded Ss in various ways. Its experimental task involved the decoding of selected stimulus words embedded in a text; by contrast, Dunn's measure of ability to use context cues required S to supply an appropriate word for sentence blanks. (Descriptions of measures used by Shotick and Sheperd were not available.) The present study matched for mean reading performance of its two subpopulations -- a practice followed by Shotick, but not by Dunn or Sheperd. Again, the present study used subpopulations with a relatively homogeneous reading range, while the other studies showed considerable latitude in this respect. Finally, the reading level for the present study population was first grade, whereas Ss used in the other studies were at the second and third grade levels.

The study tested the following hypotheses:

1. Provision of a context will produce significant improvement in word recognition of mentally retarded and normal Ss.

2. Facilitation of word recognition by context will be significantly greater for normal, as compared to mentally retarded, Ss.

METHOD

Subjects

The population for the study consisted of 26 children enrolled in New York public school classes for the retarded and 24 first grade children attending regular classes. Reading level for these subpopulations was equated for both mean and range through administration of the Wide Range Achievement Test (WRAT). Population data are given in Table 1. IQs were not available for the control group but were presumed to be within normal range.

Materials

Materials for the study were based on a primary level story called "Too Soon for Freddy." This story, which appears in the Betts Reading Series, was selected because it was not generally familiar to the study population. The materials consisted of two booklets: one presented 40 words excerpted from the Betts story, while the second presented these words embedded in the text. (Evaluation was based on Ss' initial exposure to any given word -- except for one word that was inadvertently scored for second exposure.) The wordlist book measured 2 1/2" x 4" and had one word imprinted in primer type per page. The text booklet was 4" x 6," used regulation rather than primer type, and contained 16 pages. Each of these corresponded to a page in the Betts story, except that illustrations were omitted.

Four "warm-up" cards were also provided. Two of these corresponded to the pages in the wordlist booklet and contained the words "Cat" and "Boy" respectively. The remaining two cards corresponded to pages in the story booklet and contained two sentences: "Here is the cat," and "See the boy."

Procedure

As previously noted, the WRAT was utilized to select subpopulations of mentally retarded and first grade children who read within the required range (1.5 - 2.2) and had comparable mean reading scores. The following problems came up while it was being administered.

The reading portion of the WRAT has two levels of difficulty, with Level 2 reserved for Ss whose CAs exceed 11-11. Several of the available mentally retarded Ss belonged to this category; however, Level 2 of the WRAT is quite steeply graded and it provided only a crude appraisal of these Ss' performance at their low reading level. Jastak, senior author of the WRAT, was consulted on this matter, and suggested that use of Level 1 would be more suitable for these Ss; this procedure was accordingly adopted. A second problem arose after a majority of Ss had been tested. At that point, an appraisal of the distribution of WRAT scores for the retarded group showed it was rather skewed toward the lower end. To produce a more equitable distribution of WRAT scores for the two groups, the remaining retarded Ss were selected from those with relatively higher scores.

Procedure for administering the experimental task called for alternation of the two experimental conditions with successive Ss. E recorded errors on protocols which duplicated reading materials. Repetitions, self-corrections and regressions were also recorded. (An analysis of relevant variables will be provided in a subsequent report.) Each reading performance was taped; these tapes were subsequently used to produce a revised, more accurate, version of the record.

RESULTS

Results of the study, based on error score data, are summarized in

Tables 2 and 3. A 2x2x2 analysis of variance was performed on three factors: population (normal vs. retarded), conditon (wordlist vs. text), and order, with repeated measures used over the last two factors. Data indicated significance only for the main effect of condition. Thus, results upheld the hypothesis that provision of a context would produce significant improvement in the reading performance of mentally retarded and normal Ss. However, since there was a nonsignificant population x condition interaction, the study failed to support a second hypothesis predicting that facilitation of word recognition by context would be significantly greater for normal than for mentally retarded Ss.

DISCUSSION

Data indicating that context had a facilitative effect on reading performance was compatible with previous research. However, the finding that both subpopulations profited equally by the presence of context was contrary to studies by Dunn and by Shotick which had indicated superiority of normal Ss on this factor. This discrepancy becomes more understandable when variation in reading level for the study populations involved is considered. (The present population was at the first grade level; whereas, Ss in studies by Dunn and Shotick were more advanced.) The primary focus for a first grade reader is mastery of a code, whereas that for more advanced readers is efficient application of that code; thus, it is probable that context is utilized differently at different stages of reading. On this basis alone, the outcome of the present study need not have been compatible with the aforementioned studies.

The aforementioned discrepancy may also be related to the fact that both samples in the present study appear to have been somewhat biased. Mentally retarded Ss showed considerable heterogeneity, suggesting that

a rather elastic interpretation of this category had been used for placement. A majority were disadvantaged, and they also seemed to include a scattering of acting out, emotionally disturbed, aphasoid, and dyslexic children. Again, as a byproduct of equation with mentally retarded Ss, normal Ss had been drawn from the less adequate readers within the available population. Hence they could have included children who were potential reading problems, as well as some who were "destined" to become mentally retarded. The present experience suggests that it may be preferable to screen out ambiguous Ss in so-called mentally retarded and normal populations in comparative studies, even if it means giving up the advantages of a randomized sample.

Previously cited studies on use of context seem to have controlled rather loosely for mean and range of reading scores. These factors appear to need more careful attention for the following reason: Since the use of context is a direct function of decoding ability, the smaller the group variability in reading performance, the more equitable the experimental task.

In terms of educational relevance, the study underscores the need for helping retardates make the most effective use possible of context cues during reading.

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Table 1

POPULATION DATA

	CA			IQ			WRAT		
	$\bar{X}$	SD	Range	$\bar{X}$	SD	Range	$\bar{X}$	SD	Range
MR	139.04*	19.1	100-172	64.96	5.66	50-72	1.81	.03	1.5-2.2
N	81.25*	5.16	76-99				1.84	.02	1.5-2.2

*months

Table 2

ANALYSIS OF VARIANCE SUMMARY TABLE

Source of Variation	Mean Square	Degrees of Freedom	F
Population	18.504	1	0.133
Condition X Order	416.253	1	3.010
Population X Condition X Order	1.359	1	0.009
Error (a)	138.386	46	
Condition	51.519	1	11.031*
Order	5.453	1	1.167
Population X Condition	.580	1	0.124
Population X Order	13.235	1	2.834
Error (b)	4.670	46	

*p= < .01

Table 3

MEAN ERRORS AND SDs FOR WORD LIST AND TEXT CONDITIONS

Group	Mean	SD
MR		
WL	17.00	7.31
Text	15.31	8.07
Normal		
WL	16.92	8.98
Text	15.88	9.08